

**CLAIM:**

1           1. A cutting tool comprising:  
2           a body comprising sintered cemented carbide, cermet or ceramic; and  
3           a hard and wear resistant coating on at least functional parts of the body, said  
4           coating comprising a structure of one or more refractory layers of which at least one  
5           layer comprises an alumina layer having a thickness of 0.5-25  $\mu\text{m}$ , and consisting  
6           essentially of single phase  $\alpha$ -alumina textured in the [300]-direction with a texture  
7           coefficient larger than 1.5, the texture coefficient being defined as:

$$TC(hkl) = \frac{I(hkl)}{I_0(hkl)} \left\{ \frac{1}{n} \sum \frac{I(hkl)}{I_0(hkl)} \right\}^{-1}$$

8           where  
9            $I(hkl)$  = measured intensity of the  $(hkl)$  reflection,  
10           $I_0(hkl)$  = standard intensity of the ASTM standard,  
11          powder pattern diffraction data, card number 43-1484,  
12          n = number of reflections used in the calculation  
13           $(hkl)$  reflections used are: (012), (104), (110),  
14          (113), (024), (116) and (300).

1           2. The cutting tool according to claim 1, wherein the alumina layer has  
2          a thickness of 1-10  $\mu\text{m}$ .

1           3.     The cutting tool according to claim 1, wherein the texture coefficient  
2     is larger than 3.

1           4.     The cutting tool according to claim 1, wherein the texture coefficient  
2     is larger than 5.

1           5.     The cutting tool according to claim 1, wherein the  $\alpha$ -alumina layer  
2     contains 0.01-10 percent by weight of residues of a texture modifying agent.

1           6.     The cutting tool according to claim 5, wherein the  $\alpha$ -alumina layer  
2     contains 0.01-5 percent by weight of residues of a texture modifying agent.

1           7.     The cutting tool according to claim 5, wherein the  $\alpha$ -alumina layer  
2     contains less than 1 percent by weight of residues of a texture modifying agent.

1           8.     The cutting tool according to claim 1, further comprising at least one  
2     layer having a thickness of 0.1-10  $\mu\text{m}$ , comprising a nitride, carbide, carbonitride,  
3     oxycarbide and/or oxycarbonitride of the metal titanium ( $\text{TiC}_x\text{N}_y\text{O}_z$ )and that said  
4     layer is in contact with the  $\alpha$ -alumina layer.

1           9.     The cutting tool according to claim 8, wherein the at least one layer  
2     has a thickness of 0.5-5  $\mu\text{m}$ .

1           10.   The cutting tool according to claim 8, wherein the outer layer is  $\alpha$ -  
2       alumina.

1           11.   The cutting tool according to claim 1, wherein the outer layer is TiN.

1           12.   The cutting tool according to claim 1, the surface of the coated  
2       cutting tool is smoothened by means of a brushing operation.

1           13.   A method of producing a coated cutting tool comprising at least one  
2       layer of textured  $\alpha$ -alumina, the method comprising:

3           introducing a tool surface to be coated into a reactive atmosphere comprising  
4       H<sub>2</sub> and/or Ar;  
5           providing the reactive atmosphere with a concentration of oxidizing species  
6       below 5 ppm;

7           initiating nucleation of the  $\alpha$ -alumina layer on the surface by first introducing  
8       HCl and CO<sub>2</sub> gasses into the atmosphere, than introducing AlCl<sub>3</sub> gas into the  
9       atmosphere;

10          maintaining a temperature of 950-1050°C during nucleation of the  $\alpha$ -alumina  
11       layer; and

12          introducing a catalyst and a texture modifying agent into the atmosphere  
13       during growth of the  $\alpha$ -alumina layer.

1           14.     The method according to claim 13, wherein the oxidizing species  
2     comprises water vapor, the catalyst comprises H<sub>2</sub>S, and the texture modifying agent  
3     comprises ZrCl<sub>4</sub>.

1           15.     The method according to claim 13, wherein 0.05-10 percent by  
2     volume of the texture modifying agent is introduced.

1           16.     The method according to claim 13, wherein 0.2-5 percent by volume  
2     of the texture modifying agent is introduced.

1           17.     The method according to claim 13, wherein 0.5-2 percent by volume  
2     of the texture modifying agent is introduced.

1           18.     A method according to claim 14, wherein the addition of the texture  
2     modifying agent to the reaction gas mixture is 0.05-10 percent by volume of the  
3     total reaction gas mixture.

1           19.     The method according to claim 18, wherein the addition of the texture  
2     modifying agent is 0.2-5 percent by volume of the total reaction gas mixture.

1           20.     The method according to claim 18, wherein the addition of the texture  
2     modifying agent is 0.5-2 percent by volume of the total reaction gas mixture.